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ANALYSIS OF SALT.

By G. E. Patrick, Prof. of Chemistry and Physics, in University of Kansas.

The purity of Kansas Salt, although its manufacture is a new industry in the State, has already been the subject of considerable remark. While it is very improbable that all the brines of the State will furnish salt of remarkable purity, yet it is worthy of notice, as a promising fact, that of those thus far examined, nearly every one has yielded a salt of most excellent quality.

To the number of such brines already known, I have one to add. The sample was from Great Bend, Barton county, and was taken from a well, at a depth of about four feet below the surface of the ground. Collected by Prof. B. F. Mudge. It was clear and sparkling, and very nearly free from calcium and magnesium carbonates, which when present in quantity are troublesome, from the fact of their deposition upon boiling, in the form of "scale."

It showed a specific gravity of 1.062 or 8.8 Baume—a great density considering that it was almost a surface water. Its contents of pure salt was one bushel, to about 95 gallons of the brine.

I have analyzed two samples of salt made from this brine, the samples being taken from salt made at different times, as a check against untrustworthy results, from accidental impurity or excessive purity.

Both salts were made with no extra precautions to insure purity, and fairly represent the quality of the marketable article for table use.

They gave upon analysis:

	No. 1	No. 2.
Sodium Chloride	96.24	96.06
Magnesium Chloride	1.22	1.56
Sodium Sulphate	1.65	1.87
Calcium Sulphate	.89	.51
	100.00	100.00

The entire absence of calcium chloride is a merit of this salt not to be overlooked.

CALAMITES.

By M. V. B. Knox, Professor of Natural Science, Baker University.

In the soft sandstone on the banks of a creek about two and one-half miles southwest of Baldwin, are found Calamites in great numbers. The quarry is west of the Dr. Cowgill farm, at the crossing of the main road from Prairie City, over a small branch of Tahwo Creek. The Calamites are found in greatest abundance and of best quality a little north of the bridge, on the west bank.

During the winter of 1873-4, while passing down this creek in search of specimens, I noticed some Calamites cropping out of the rock, and afterwards succeeded in securing a few fine ones, but did not work the quarry to any extent, as there was in our cabinet a fine lot of Calamites gathered from various other points about Baldwin. Some time last winter Prof. Mudge, accompanied by Mr. Joseph Savage of Lawrence, came to Baldwin, having heard of this quarry. Armed with a strong, sharp iron bar for splitting up the rock, we went there with some students to assist us, and in the course of three hours secured as many as fifty good specimens, some fifteen of them being "tips," of great beauty and perfection. Since then we have taken out and put in our cabinet about two hundred good specimens for preservation and exchange, while a great many more have been taken out for the State University and for different individuals. There are several other places about town at which Calamites are found, probably in the same layer of sandstone, but none yields specimens like this. Prof. Mudge thinks there is no other quarry equal to this one, in the west.

These Calamites represent the species cannaeformis, and transitionis, and others which I have been unable to identify with my limited literature on this group of fossils. They vary greatly in size, some being less than half an inch in diameter, while others are four or five inches. The longest continuous specimen is about twenty-eight inches. They exist in vast numbers in small areas, some small slabs of rock revealing them by the dozen. Of so-called "tips," the most valuable specimens, we have found three kinds. The most common is pyramidal in shape, three or four inches in diameter at the base, and six or eight inches in length, the apex or point being deflected. Another kind is small, less than an inch in diameter, with the point rounded, while the preceding one is sharp. The third, of which I have found but one specimen, is slender, sharp, wedge shaped, and with very fine striae. Lyell figures some of these tips, and comes to the conclusion that they are the roots of the Calamite instead of the top of the stalk. He and Dr. Dawson found, in Nova Scotia coalfields, these tips projecting downwards in position, thus showing their nature beyond question. He thinks too, that they are the striated piths, instead of being the outside of the stem. He is borne out in these views by several able European geologists. In one or two of these specimens in our cabinet, I have found a mark that is not mentioned either by Lyell or Dana. It is a deep scar close to the joints, as large as the end of one's finger. They occur in vertical series at alternate joints, and one-quarter around the stem. Are they the marks of branches? Are the very small fossils only the branches of the main trees? The rarity of these large scars suggest proof of Lyell's position, that the most of our Calamites are only casts of the piths.

In connection with this quarry and others about Baldwin, I have found a fossil as yet not identified, but which I surmise to be roots of Calamites, like underground stems or root-stalks. They are from half an inch in diameter to two inches, and I have secured some a foot long. They are not marked with striae lengthwise, but are decidedly rugose transversly, like roots of trees growing at present. There seem to be no marks of joints or branchings. In every instance of extensive Calamites, they are found, and only there.

Authors disagree in locating the place of Calamites in the vegetable kingdom. Most, however, among them Dana, place them in Lycopodiaceae, the Equisetum, or gigantic "horsetail," the only representative now living being the scouring rush. Still there are many marks of their belonging to Gymnosperms. In connection with these Calamites near Baldwin, are found various leaves, flags, and some well defined casts of Cordiates. Also well preserved Sigillaria.